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09686468 2A

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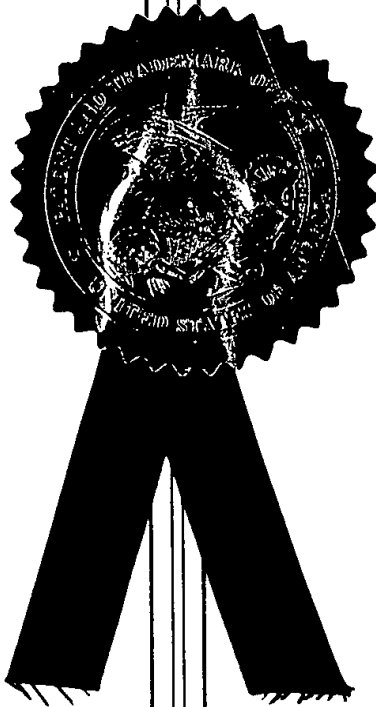
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<input checked="" type="checkbox"/>	Other, description : <u>US. Patent 5820589</u>
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The United States of America



The Commissioner of Patents and Trademarks

Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America for the term set forth below, subject to the payment of maintenance fees as provided by law.

If this application was filed prior to June 8, 1995, the term of this patent is the longer of seventeen years from the date of grant of this patent or twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.

If this application was filed on or after June 8, 1995, the term of this patent is twenty years from the U.S. filing date, subject to any statutory extension. If the application contains a specific reference to an earlier filed application or applications under 35 U.S.C. 120, 121 or 365(c), the term of the patent is twenty years from the date on which the earliest application was filed, subject to any statutory extension.

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09/686468

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US005820589A

United States Patent [19]

Torgerson et al.

[11] Patent Number: **5,820,589**[45] Date of Patent: **Oct. 13, 1998**[54] **IMPLANTABLE NON-INVASIVE RATE-ADJUSTABLE PUMP**

0 647 453 A1 4/1995 European Pat. Off. .

[75] Inventors: **Nathan A. Torgerson**, White Bear Lake; **Raymond F. McMullen**, Shorewood, both of Minn.[73] Assignee: **Medtronic, Inc.**, Minneapolis, Minn.[21] Appl. No.: **641,363**[22] Filed: **Apr. 30, 1996**[51] Int. Cl.⁶ **A61M 11/00**[52] U.S. Cl. **604/93**

[58] Field of Search 604/891.1, 65-67, 604/93, 131, 152, 246-249, 890.1; 128/DIG. 12, DIG. 13

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International Search Report for International Application No. PCT/US 97/07114.

Primary Examiner—Manuel Mendez*Attorney, Agent, or Firm*—Arnold, White & Durkee[57] **ABSTRACT**

In accordance with the present invention, an implantable pump is programmed non-invasively by means of a programmer that communicates flow rate information by means of radio frequency telemetry or other methods of non-invasive telemetry. The programmer also supplies power to the implantable pump during programming. The implanted rate-adjustable pump that receives rate information and power by telemetry preferably does not include a battery or any other type of internal power supply, relying only on the energy obtained from the programmer through telemetry.

8 Claims, 3 Drawing Sheets